Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

The Canadian Ice Age. Notes on the Pleistocene Geology of Canada, with Especial Reference to the Life of the Period and its Climatal Conditions. By SIR J. WILLIAM DAWSON, G.M.G., LL.D., F.R.S., F.G.S., etc. Montreal: William V. Dawson, 1893. 301 pp., 8vo.

The work opens with a chapter of historical notices, embracing a sketch of the tenets held by the author during the long period of his studies on Pleistocene phenomena. Among these are the following: 1. The phenomena are not to be explained by any one cause, or by any one all-embracing hypothesis. 2. The astronomical changes that have been invoked are incapable of fully explaining the facts. 3. There has not been, at any time, a polar ice cap. 4. The phenomena indicate local mountain glaciers coöperating with floating ice in various forms. 5. The cold climate was mainly the result of peculiar geographical conditions and of a different distribution of oceanic currents. 6. The close of the period was not very remote. The author quotes freely from his previous writings in elucidation of these views, and cites certain recent tendencies that seem to him to indicate a drift of opinion towards the views he has held so long.

In the second chapter he gives the succession of Pleistocene deposits in Canada, as he correlates them, as follows:

Montreal and Lower St. Lawrence.	*North Shore of Lake Ontario.*	*Belly River, Northwest Territory.*
J. Wm. Dawson.	J. G. Hinde.	G. M. Dawson.
I.	I.	I.
Surface soil, post-glacial alluvia, and peat.	Surface soil, stratified sand and gravel.	Surface soil and prairie alluvium.
II.	II.	II.
Surface boulders, Saxicava sand and gravel. Boulders in and below sand.	Boulders, sand, etc. Laminated clay. Upper boulder deposit.	Upper boulder clay.
III.	III.	III.
Upper Leda clay, marine shells and drift plants. Lower Leda clay, marine shells and drift plants.	Stratified sand and clay, with fresh-water shells and plants.	Gray sand with iron-stone nodules. Brownish sandy clay. Carbonaceous layers and peat. Gray sand ironstone.
IV.	IV.	IV.
Lower boulder clay or till. Many native and some traveled boulders. A few marine shells of arctic species.	Lower boulder clay or till. Native and traveled boulders.	Lower boulder clay. Many traveled boulders.

This is followed by a general view of the entire series of deposits of eastern Canada and a discussion of these, in the course of which he states the views of the origin of the deposits which are set forth more fully in a subsequent part of the book. In the course of the chapter he presents a scheme of correlation of the phenomena of the glacial period in the Cordilleran region conjointly with those of the region of the great plains (in ascending order), in which epeirogenic movements constitute the leading feature. The following is an abbreviation :

Cordilleran Region.	*Region of the Great Plains.*
Cordilleran zone at a high elevation; severe glaciation; maximum development of Cordilleran glacier.	Correlative subsidence and submergence of the great plains with possible contemporaneous elevation of Laurentian axis and maximum development of the ice upon it.
Gradual subsidence of Cordilleran region; boulder clay of interior plateau and Yukon basin; lower boulder clay of coast region; interglacial silty beds at later stage.	Correlative elevation of western part of great plains, probably irregular; formation of extensive lakes; interglacial deposits, including peat beds.
Re-elevation of Cordilleran region; maximum of second glaciation.	Correlative subsidence of plains; submergence to base of Rocky Mountains; formation second boulder clay.
Partial subsidence Cordilleran region; formation of white silts; upper boulder clay of coast region, probably.	Correlative elevation of plains, probable formation of Missouri Coteau along shore line.
Renewed elevation of Cordilleran region; general amelioration, closing glacial period.	Simultaneous elevation of great plains to present levels; exclusion of the sea; formation of Lake Agassiz; gradation into present period.

Sir William Dawson would make three subdivisions of the Pleistocene period embracing (*a*) *Earlier Pleistocene;* irregular depression of the continents, with cold climate and great local glaciers; (*b*) *Middle Pleistocene;* submergence of coasts and re-elevation of interior plateaus, with milder climate—interglacial period; and (*c*) *Later Pleistocene;* submergence of plains and general ice drift with local glaciers in mountains. The succeeding thirty pages of the chapter are devoted to the description of the deposits.

The third chapter is devoted to physical and climatal conditions. In the course of this the author introduces a map to show the distribution of glaciated and unglaciated land, and of ice-laden and of ice-free water during a typical stage of the Pleistocene period. Greenland, the Laurentian tract, the Adirondack, the northern Appalachian, and the northern Cordilleran regions are represented as glacial land. A broad tract sweeping around the Laurentian belt covering the Great Lake region and a large portion of the great plains of Canada is represented as submerged beneath an ice-laden sea. So also is a large area embracing Hudson's Bay and the adjacent straits. The Central American region is represented as extensively submerged and the equatorial waters of the Atlantic are represented as passing through to the Pacific.

Under the head of causes of glaciation, the author rejects with emphasis the prevalent glacial hypothesis, insisting strongly upon the impossibility of so great an ice sheet reaching to so low a latitude. He quotes extensively from Woeickoff in support of his position. The terminal moraines of most American writers he refers to deposition "at the margin of a sea laden with vast fields of floating ice," and thinks that some of the anomalies in their levels are due to differential elevation. He explains the striation (in regions not occupied by glaciers, under his view) by referring them largely to the action of "pan ice" aided by tides, especially on sinking coasts, and subordinately to iceberg action proper. His views on this point are well known. The very peculiar climatic conditions of the age are attributed to geographical changes, but the discussion is not carried into detail, and we have been unable to form a definite conception of the supposed method of causation.

The most valuable chapter, in our judgment, is that which relates to Pleistocene fossils. There is an admirable collection of data in detail, especially from the Lower St. Lawrence region—the richest of American fields in glacial paleontology. In regard to the relations of man to the glacial formations, Sir William Dawson apparently inclines to the interpretations of Professor Holmes.

At the close of the work complimentary reference is made to Howorth's book, "The Glacial Nightmare," and the similarity of views there expressed to those of the present work approvingly noted. Tactically we think this is an error, since conclusions associated with field experience such as those of Dr. Dawson will be likely to be placed by geologists in quite a different category from the dialectic lucubrations of a mere academic treatment. Support must be scant when "The Glacial Nightmare" is counted in.

The present writer dissents radically from the author's fundamental conclusions and from his estimate of the present drift of opinion, but finds the book interesting and suggestive, and its contributions to Pleistocene paleontology notably valuable. T. C. CHAMBERLIN.

The Post-Pliocene Diastrophism of the Coast of Southern California. By ANDREW C. LAWSON. Bulletin of the Department of Geology, University of California Vol. 1, No. 4, pp. 115–160, plates 8–9.

IN this bulletin, Professor Lawson presents the results of some of his studies on the west coast of California. The essay concerns itself especially 1° with the coasts of San Diego and Los Angeles counties, and with the islands of San Clemente and Santa Catalina which lie a few miles to the west; and 2° with the coastal region from Santa Cruz to the Golden Gate. So far as concerns the southern region, the data are drawn principally from four localities. These are: a) the coastal slope of San Diego county,—the San Diego mesa; b) San Pedro Hill; c) San Clemente Island; d) Santa Catalina Island.

The San Diego mesa is a terraced plain having a breadth of from twelve to eighteen miles. It is characterized as a Pliocene delta, made up principally of Pliocene sands and sandstones, but covered by a thin sheet of river gravels. The evidence for the statement that these gravels are of fluviatile origin is not given. The gravels are thought to have been deposited approximately at sea level. They now stand at a maximum elevation of nearly eight hundred feet. The inference is that an elevation of eight hundred feet has taken place along the coast of San Diego county since Pliocene time. Various marine terraces at levels of seven hundred feet and less characterize the mesa.

San Pedro Hill is an abrupt headland on the coast of Los Angeles county. Its slopes likewise show a series of marine terraces and sea-cliffs. The highest terrace on this headland stands at an elevation of 1240 feet. There are many lower terraces on the San Pedro Hill, the lowest mentioned having an altitude of 120 feet. Through the higher terraces the streams have cut for themselves cañons; but they flow over the lower terraces in shallow channels. This is evidence of the recency of the elevation marked by the lower terraces. Molluscan borings in the old sea-cliffs, up to an elevation of 1240 feet, may still be seen.

From the relations of the Miocene to the Pliocene formations of the headland, it is inferred there was an "important interval of denu-